

Abstract Submitted
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The effective three-body monopole interaction and ground-state energies in the $0p$ -shell¹ A.F. LISETSKIY, S.G. DE CLARK, B.R. BARRETT, M.K.G. KRUSE, University of Arizona — Following Refs. [1,2], we have earlier developed a valence cluster expansion to construct effective 2- and 3-body Hamiltonians for the $0p$ -shell by performing No Core Shell Model (NCSM) calculations for $A = 6$ and 7 nuclei and explicitly projecting the many-body Hamiltonians onto the $0\hbar\Omega$ space. These effective Hamiltonians can be separated into 0-, 1- and 2-body contributions (also 3-body for $A = 7$), which can be used in standard shell model (SSM) calculations. In new studies we have derived the effective 3-body monopole Hamiltonian for the $0p$ -shell by performing $6\hbar\Omega$ NCSM calculations for $A = 7 - 16$ nuclei and used it to investigate how the ground-state energies of these nuclei are affected, when it is included in the SSM calculations.

[1] P. Navrátil, M. Thoresen and B.R. Barrett, Phys. Rev. C **55**, R573 (1997).

[2] A. Lisetskiy, **et al.**, Phys. Rev. C **78**, 044302 (2008).

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